

**EFFECT OF AMMONIA CONCENTRATION ON
THE PROPERTIES OF SILICA NANOPARTICLES**

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ABSTRACT

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Silica nanoparticles were prepared by Stöber method using tetraethoxysilane as precursor, and ammonia as catalyst. The silica nanoparticles then were functionalized with silane coupling agent, 3-aminotriethoxysilane (APTES) to show the feasibility of anchoring functional group NH_2 on silica nanoparticles surface. Five different concentration of ammonia was used to study the effect on the properties of silica nanoparticles. The samples were analyzed using SEM, XRD and FTIR. From the analysis, it has been found that the highest concentration of ammonia produced the largest particle size around 155.42 nm whereas the lowest concentration of ammonia produced the smallest particle size around 81.25 nm. The functionalization of APTES on the silica nanoparticles were analyzed using FTIR where the result shows the existence of amide group on the silica nanoparticles. This proves that the functionalization of APTES was successful. XRD pattern shows broad peak at 23° that defined as the typical amorphous state of silica. The reaction parameters should be optimized further to produce finer silica nanoparticles which has better solubility and more effective target drug delivery in biomedical field.

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